REMARKS/ARGUMENTS

Applicants have received the Office Action dated January 10, 2008 (hereinafter, "Office Action"), in which the Examiner rejected claims 2, 4-12 and 63-65 under 35 U.S.C. § 102(b) as allegedly being anticipated by Cohen et al. (U.S. Pat. No. 5,950,189, hereinafter "Cohen"). Claims 13, 15-19, 21, 22, 24-28, 30, 32, 35-37, 39-41, 44-47, 49, 50, 52-57 and 66-75 have been allowed. No claims have been amended by this response. Based upon the arguments presented herein, Applicants believe all claims are in condition for allowance.

In rejecting independent claim 2 as allegedly anticipated by Cohen, the Examiner stated that Cohen teaches, among other things,

> ***Selecting a host; selecting at random a document associated with the host; retrieving the selected document randomly choosing whether to select a random new document***. See column 5, lines 9-67 and column 6, lines 1-67. The reference chooses a host and utilizes preposition 2.3 to determine the probability that a random walk from node v terminates at the node. Furthermore, column 10, lines 1-19, discloses an experimental test of the system of the invention where the task of estimating the largest entries in each row of AtAm were each of the rows {X1……Xn} of A is the representation of a textual document.[1]

Applicants respectfully traverse the Examiner's characterization of the cited art, as well as the citation's applicability to the cited claim elements, noting that Cohen makes no mention at all of selecting a host, that Cohen does not teach or suggest selecting a document, and that the use of preposition 2.3 of Cohen to determine the probability that a random walk terminates at a node has no relevance to any of the claim elements.

Applicants respectfully note that Cohen teaches a system for retrieving data from a database, wherein the system generates a sampled representation of the database according to a probability distribution over the records of the database.[2] The data within the database is represented as a set of vectors of

[1] Office Action, ¶ 5, p. 2 (emphasis in original).

[2] Cohen, col. 14, lines 2-9.

numeric feature values,[3] with each database record within the database having a set of attribute values.[4] The system identifies high-valued entries of non-negative matrix products without the need for full computation of the products.[5] Each entry of the resulting product matrix corresponds to the similarity between a weight vector and a set of instance vectors represented as rows of a matrix that represents the database being processed.[6] The probability distribution is determined by random walks on a weighted, directed graph that represents the database.[7] A query is applied to the sampled representation of the database to return results.[8] The sampled representation is used to compute an approximation of the dot product between the database query and each database record,[9] and to return results for those records with a dot product approximation in excess of a threshold value.[10]

Applicants further respectfully note that the random walk taught by Cohen operates on a matrix A of dimensions n_1 x n_2, wherein the matrix A is represented by a weighted directed bipartite graph, with n_1 nodes $\{V_1,...,V_{n_1}\}$ at the lower level and n_2 nodes $\{V_1,...,V_{n_2}\}$ at the upper level.[11] As one of ordinary skill in the art would recognize, these "nodes" are mathematical constructs that represent

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[3] Cohen, col. 1, lines 7-10.

[4] Cohen, col. 14, lines 2-4.

[5] Cohen, col. 2, lines 3-7.

[6] Cohen, col. 1, lines 51-56.

[7] Cohen, col. 14, lines 14-16.

[8] Cohen, col. 14, lines 20-21.

[9] Cohen, col. 14, lines 26-28.

[10] Cohen, col. 14, lines 31-33.

[11] Cohen, col. 5, lines 35-39. Applicants respectfully note that although the cited text recites "$\{V_1,...,V_1\}$" and "$\{V_1,...,V_{n_2}{}^1\}$,"Applicants believe that both node set representations include minor errors; specifically the second subscript of the first node set should be "n1" not "1," and the superscript of "1" at the end of the second node set should not be present at all. Applicants respectfully submit that the errors do not affect the argument presented, but have been noted nonetheless for clarity, completeness and accuracy.

terms or feature values within each of a plurality of instance vectors within the database matrix *A*. Specifically,

> In pattern recognition or retrieval tasks, a database of empirical data to be processed (images, signals, documents, etc.) is commonly represented as a set of a vectors $x_1, \ldots, x_n$ of numeric feature values. Examples of feature values include the number of times a word occurs in a document, the coordinates of the center of mass of black pixels in an image, or the set of spectral coefficients output by a speech analyzer....Documents and queries are represented as vectors of terms or features....Applying a weight vector q to a database of instance vectors means computing the vector by matrix product $q^T A^T$, where A is a matrix whose rows $\{x_1, \ldots, x_n\}$ are the instance vectors.[12]

Applicants respectfully submit that it is clear from the foregoing that the cited reference merely describes a random walk through a mathematical and graphical representation of feature values that describe characteristics *of* the data within a database, not a random walk through the represented data itself.

By contrast independent claim 2 requires "selecting a host," "selecting at random a document associated with the host," "randomly choosing whether to select a random new document," "responsive to choosing to select the random new document" randomly selecting a new host and a new document associated with the new host, and "responsive to choosing not to select the random new document" randomly selecting a link in a retrieved document. Applicants respectfully submit that Cohen does not teach or even suggest any of these limitations. As already noted, the nodes taught by Cohen are mathematical constructs that one of ordinary skill in the relevant art would recognize as commonly used when describing bipartite graphs, constructs which describe terms or features of the data within the database. Thus, the nodes do not represent or link to the data itself, let alone any "hosts" on which the data may reside, as the Examiner seems to have implied in the rejection of the claim. As a result, Cohen does not teach or even suggest randomly selecting hosts, documents, or links to documents, as required by the claim.

[12] Cohen, col. 1, lines 7-14, lines 37-38, and lines 51-54.

Further, Cohen does not even mention a "host," and the only computer described by Cohen is retrieval processing unit 30 of figure 1. Cohen also does not teach or even suggest the use of links within documents that reference other documents, let alone the random selection of such links required by the claim. Applicants further respectfully note that the Examiner did not even address those claim steps performed "responsive to choosing not to select the random new document." Applicants additionally note that the use in Cohen of proposition 2.3 of the reference to determine the probability that a random walks terminates at a specific node is irrelevant, since independent claim 2 does not require determining such a probability.

At least because Cohen does not teach or even suggest all of the limitations of independent claim 2, and at least because the Examiner has failed to present evidence that Cohen teaches the steps required by the claim in response to not choosing to randomly select a new document, Applicants respectfully submit that independent claim 2 is not anticipated by Cohen under 35 U.S.C. § 102(b). Applicants therefore respectfully submit that independent claim 2, as well as those claims that depend upon it, are all in condition for allowance.

With regard to independent claims 7 and 9, Applicants respectfully note that the Examiner rejected these claims under a rationale similar to that used in rejecting independent claim 2.[13] Applicants thus respectfully submit that for at least the same reasons as those presented above regarding the rejection of independent claim 2, as they apply to those limitations which claims 7 and 9 have in common with claim 2, independent claims 7 and 9, as well as those claims that respectively depend upon them, are not anticipated by Cohen under 35 U.S.C. § 102(b) and are therefore all in condition for allowance.

CONCLUSION

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents

[13] Office Action, ¶ 5 p. 3.

accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,

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